Knowledge Mapping 101

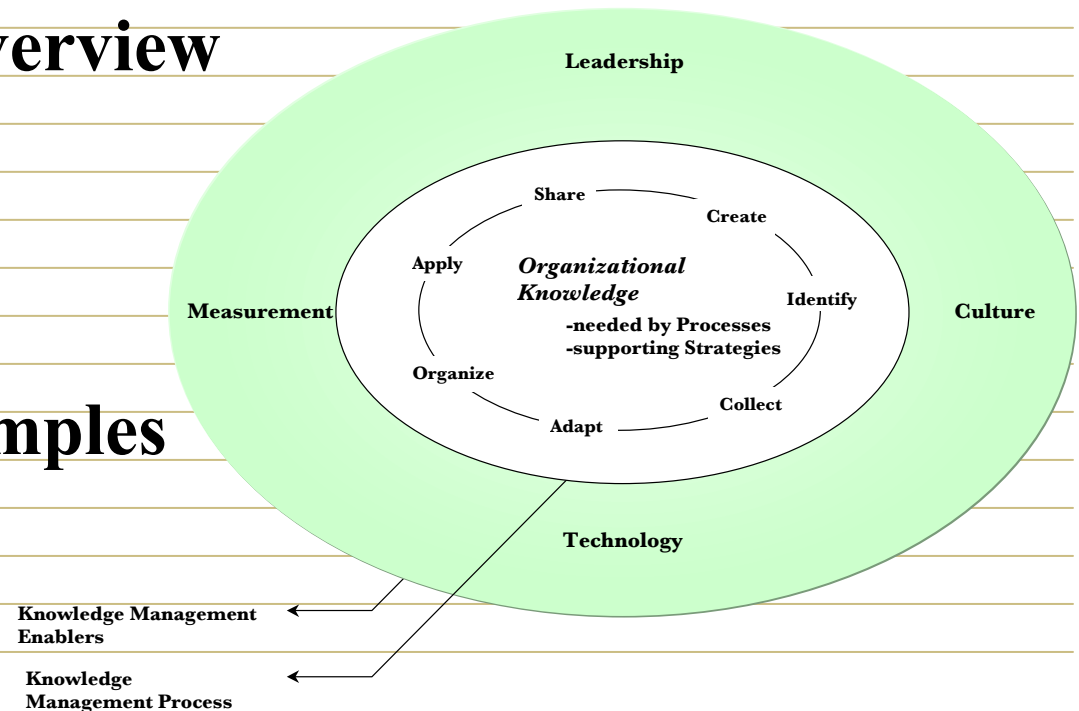# Knowledge for Development Seminar
09/22/03

Knowledge Mapping Agenda

- **Knowledge for Development**
  - **What is Knowledge Management?**
- **Knowledge Mapping**
  - **Mapping Overview**
    - **Definitions**
    - **Why**
    - **How**
  - **USAID Examples**
  - **Discussion**

Leadership

Share

Create

Apply

Organizational Knowledge

Identify

Measurement

-needed by Processes
-supporting Strategies

Culture

Organize

Collect

Adapt

Technology

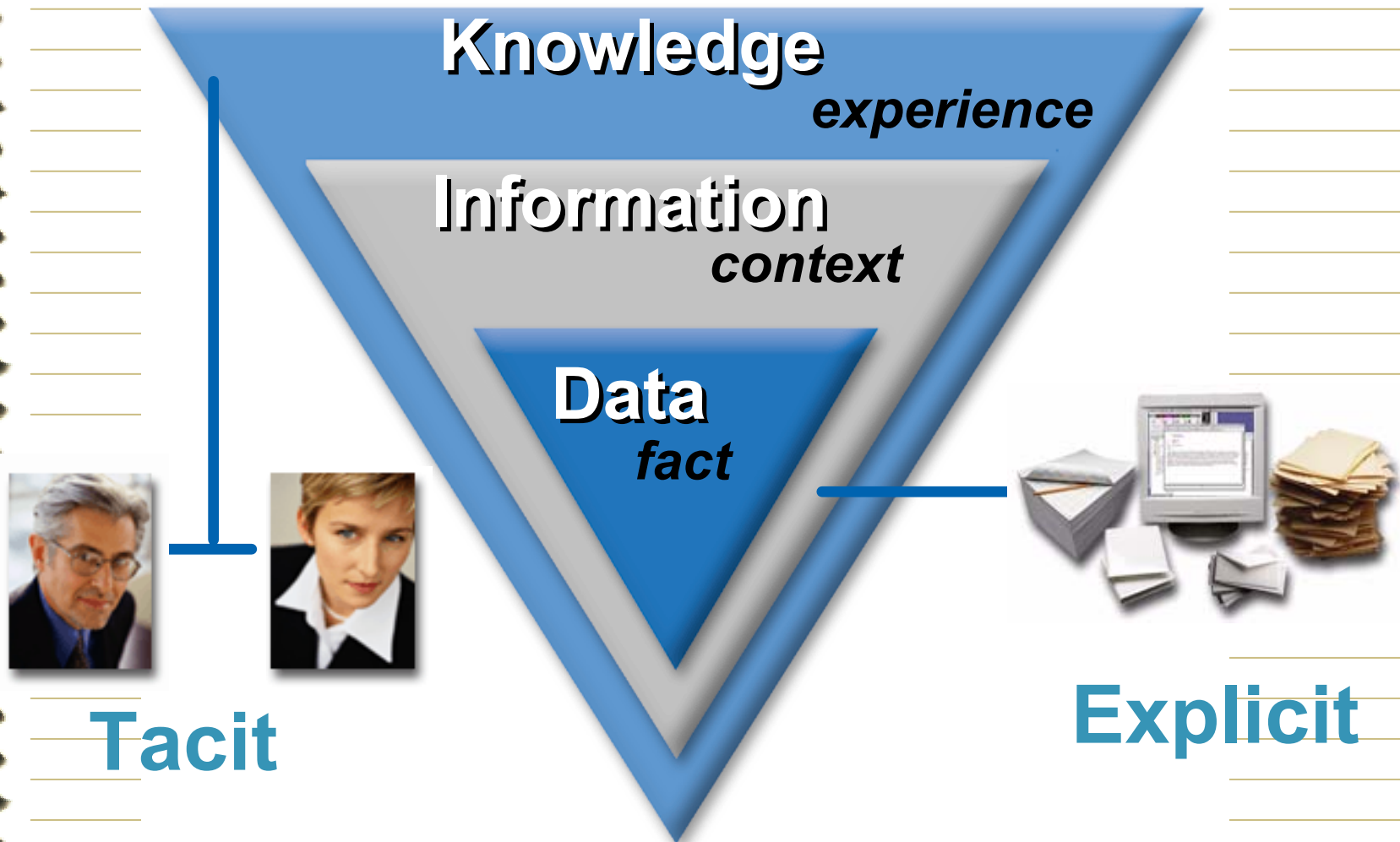Knowledge Management Enablers

Knowledge Management Process

Knowledge Management Discussion

– **What do we mean by "management"?**

– **What is "knowledge"?**
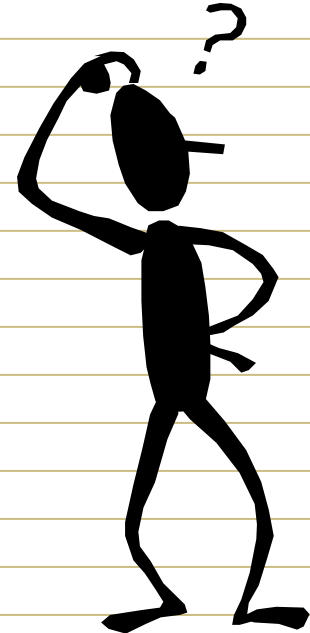
Know Who, Know How, and Know What

Knowledge
experience

Information
context

Data
fact

Tacit

Explicit

Conversion of knowledge between tacit and explicit forms

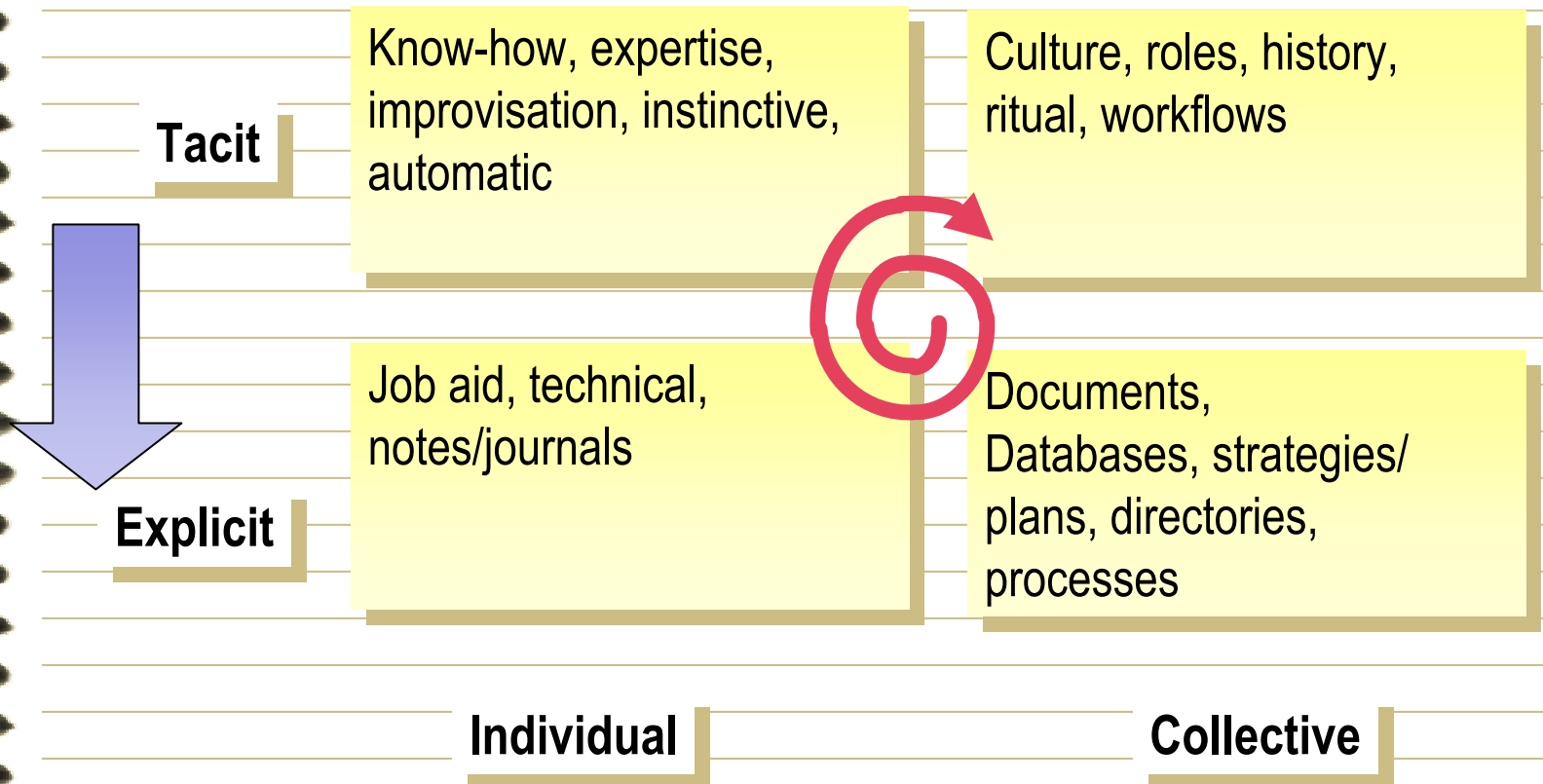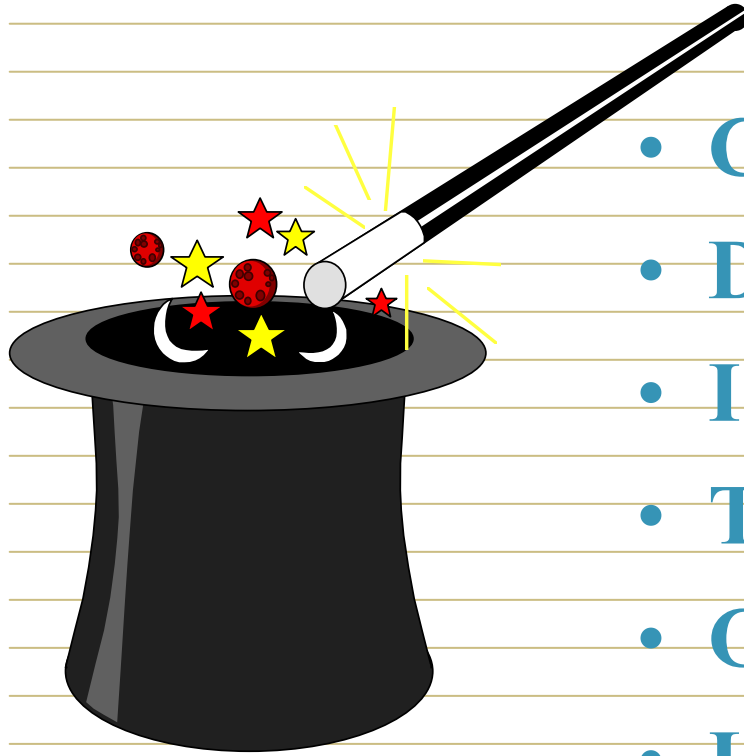|	
TACIT TO TACIT SOCIALIZATION E.G., TEAM MEETINGS AND DISCUSSIONS	**TACIT TO EXPLICIT** EXTERNALIZATION E.G., DIALOG WITHIN TEAM, ANSWER QUESTIONS
EXPLICIT TO TACIT INTERNALIZATION E.G., LEARN FROM A REPORT	**EXPLICIT TO EXPLICIT** COMBINATION E.G., E-MAIL A REPORT

An iterative process

	Individual	Collective
Tacit	Know-how, expertise, improvisation, instinctive, automatic	Culture, roles, history, ritual, workflows
Explicit	Job aid, technical, notes/journals	Documents, Databases, strategies/ plans, directories, processes

Characteristics of Knowledge

- Created by anyone
- Distributed cheaply
- Increases when shared
- Transmitted in networks
- Guided by vision
- Unique for individuals
- Infinite resource

Knowledge Management

Alan Marwick, IBM Research Division

- **Knowledge**

  - includes both the experience and understanding of the people in the organization and the information artifacts, such as documents and reports, available within the organization and in the world outside

- **Knowledge Management**

  - name given to the set of systematic and disciplined *actions* that an organization can take to obtain greatest *value* from the knowledge available to it
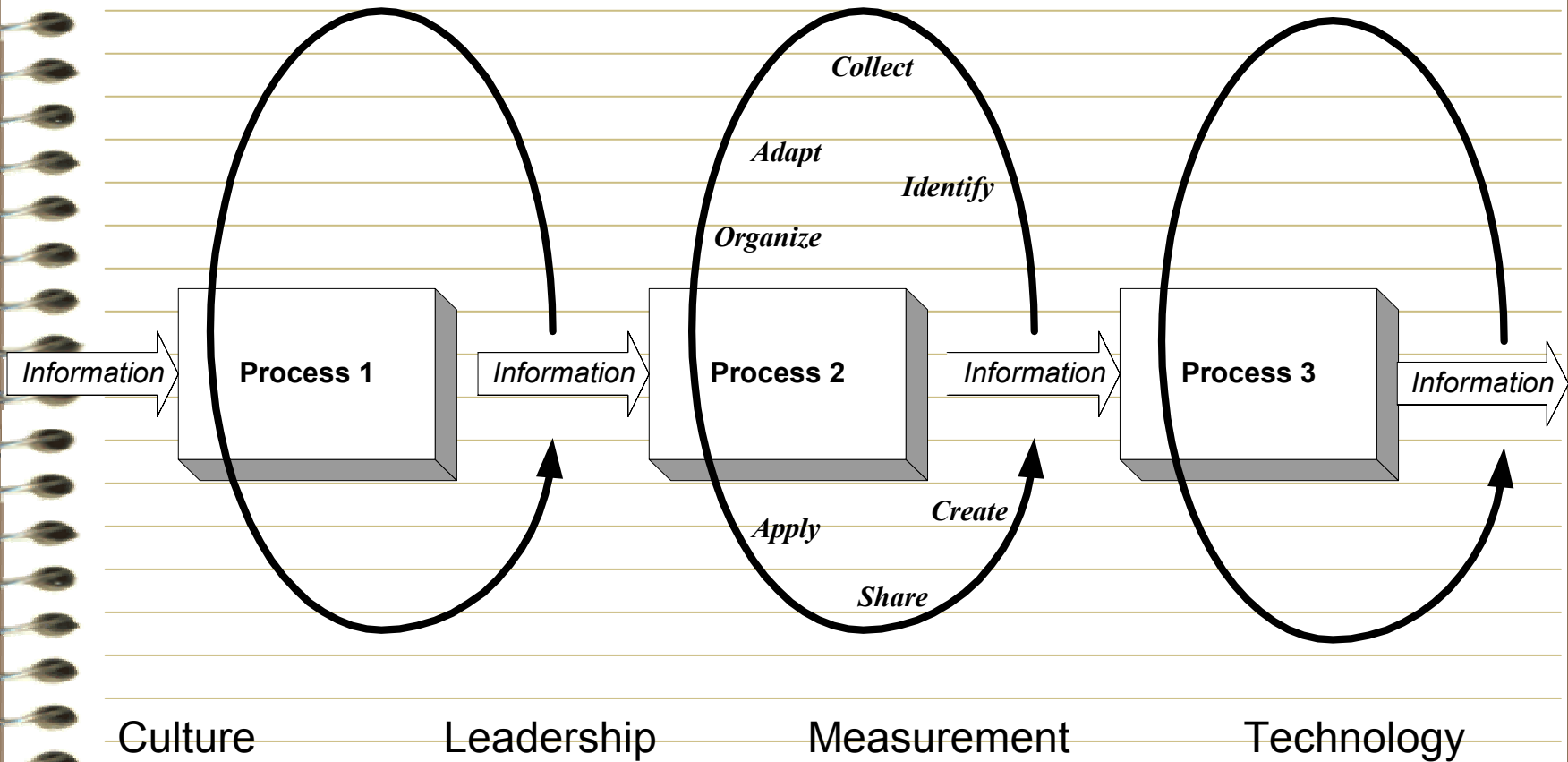
Knowledge Management

- ## APQC Definition
  - *Connecting people to the best practices, knowledge, and expertise they need to create value.* From its 4th Annual Conference on Knowledge Management held in Washington, D.C. in May 2002, the American Productivity and Quality Association (APQC)
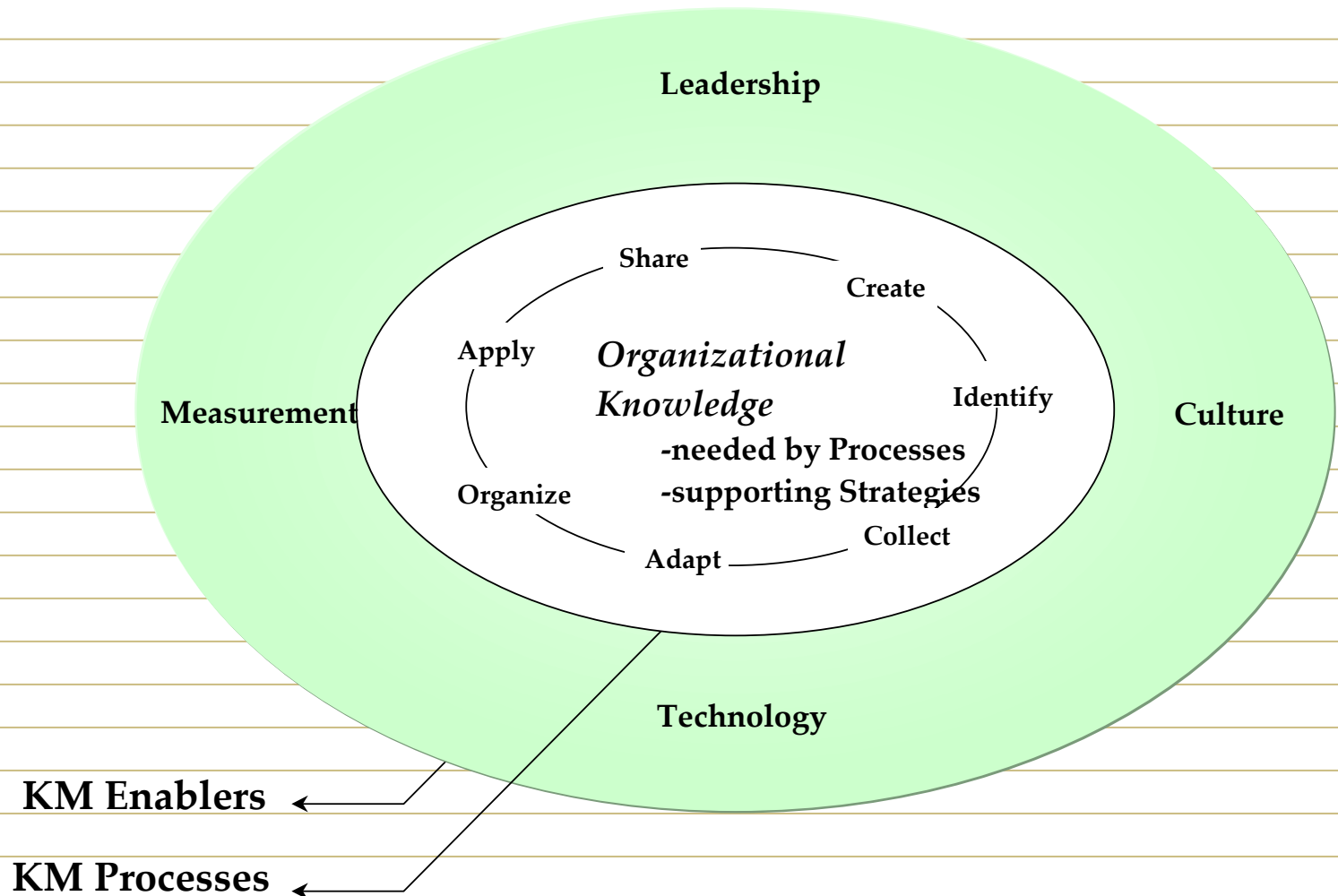
- ## USAID Working Definition
  - *Systematic approaches to help information and knowledge emerge and flow to the right people at the right time to create value.*

Knowledge Management Processes and Enablers
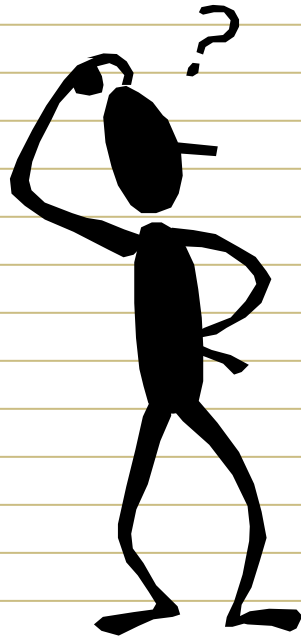

Information → **Process 1** → Information → **Process 2** → Information → **Process 3** → Information

Collect

Adapt

Identify

Organize

Apply

Create

Share

Culture   Leadership   Measurement   Technology

Knowledge Management Framework

-American Productivity Quality Center

Leadership

Measurement

Culture

Share

Create

Apply

Organizational Knowledge
-needed by Processes
-supporting Strategies

Identify

Organize

Collect

Adapt

Technology

KM Enablers
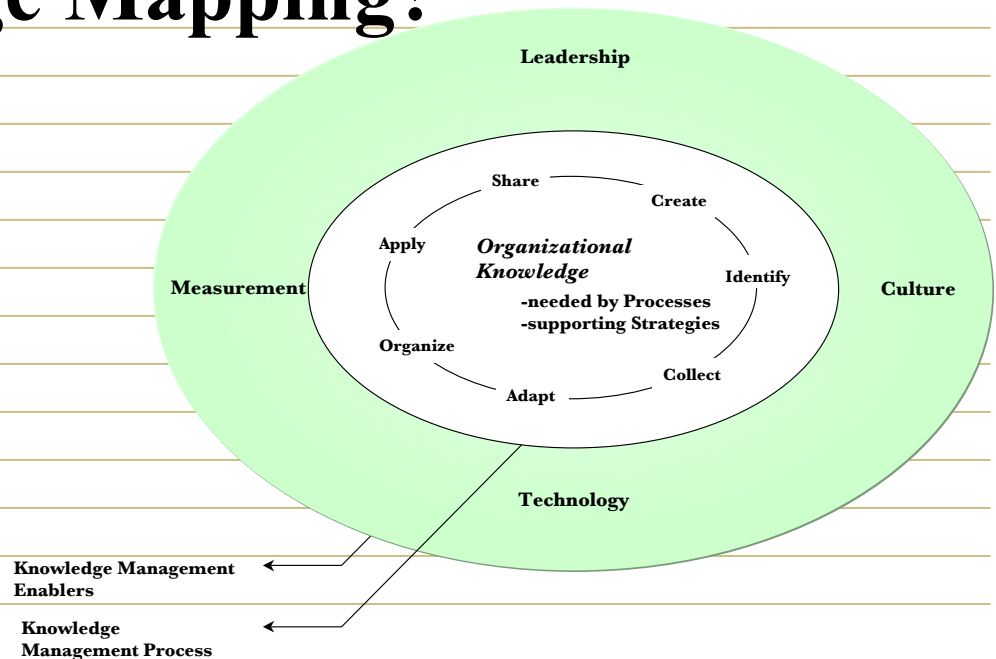
KM Processes

Knowledge Management

- **Questions**
- **Suggestions**
- **Concerns**

Systematic approaches to help information and knowledge emerge and flow to the right people at the right time to create value.
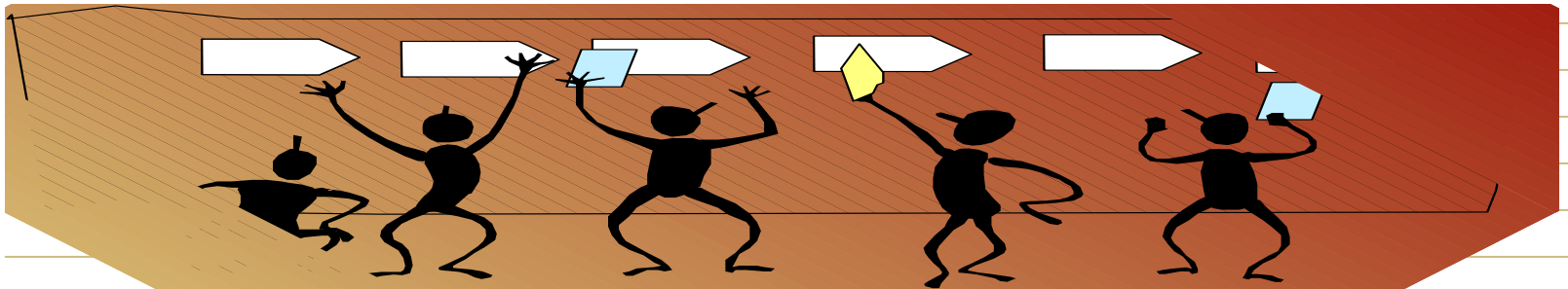
Knowledge Mapping Overview

- **Some Definitions**
  - **What is Knowledge Mapping?**
  - **What it is not**
- **Why Knowledge Mapping?**
- **How to Map**

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Knowledge Management Enablers

Knowledge Management Process

Knowledge Mapping Definitions

- ## What is Knowledge Mapping ?

  – Knowledge mapping is a *process* of surveying, assessing and linking the *information, knowledge, competencies and proficiencies* held by individuals and groups within an organization

  (Dr Ann Hylton, KeKma-Training 2002)

Knowledge Mapping Definitions

– An ongoing quest within an organization (including its supply and customer chain) to:

  • help discover the location, ownership, value and use of *knowledge artifacts*,

  • learn the roles and *expertise* of people,

  • identify constraints to the *flow of knowledge*, and

  • highlight opportunities to leverage existing knowledge.

– It illustrates or "maps" how knowledge flows throughout an organization.

(D. Grey, 2002 Smith Weaver Smith Inc)

What is Knowledge Mapping?

- Knowledge mapping is a *process* by which organizations can identify and categorize knowledge assets within their organization – people, processes, content, and technology.

- It allows an organization to fully leverage the existing *expertise* resident in the company, as well as identify barriers and constraints to fulfilling strategic goals and objectives.

- It is constructing a *roadmap* to locate the information needed to make the best use of resources, independent of source or form.

(W. Vestal, APQC, 2002)

What is Knowledge Mapping ?

– A Knowledge Map describes *what knowledge is used in a process*, and *how it flows around the process*. It is the basis for determining knowledge commonality, or areas where similar knowledge is used across multiple processes.

– Fundamentally, a process knowledge map contains information about the organization's knowledge. It describes *who* has what knowledge (tacit), *where* the knowledge resides (infrastructure), and *how* the knowledge is transferred or disseminated (social).

(IBM Global Services - Technique Paper, 2000)

Knowledge Mapping: Where to focus?

Strategic

- **Enterprise-level**
  — Strategic business, technical, market knowledge
  — Determine the organization's "bench strength"
  — Identify areas to focus KM efforts
- **Cross-functional between divisions/business groups**
  — Operational assessment of working knowledge

Tactical

- **Working group/process**
  — Tactical and operational knowledge applied to process excellence, innovation, customer relationship

Types of Knowledge Maps

Enterprise Knowledge Map

Cross-Functional Knowledge Map

Process Knowledge Map
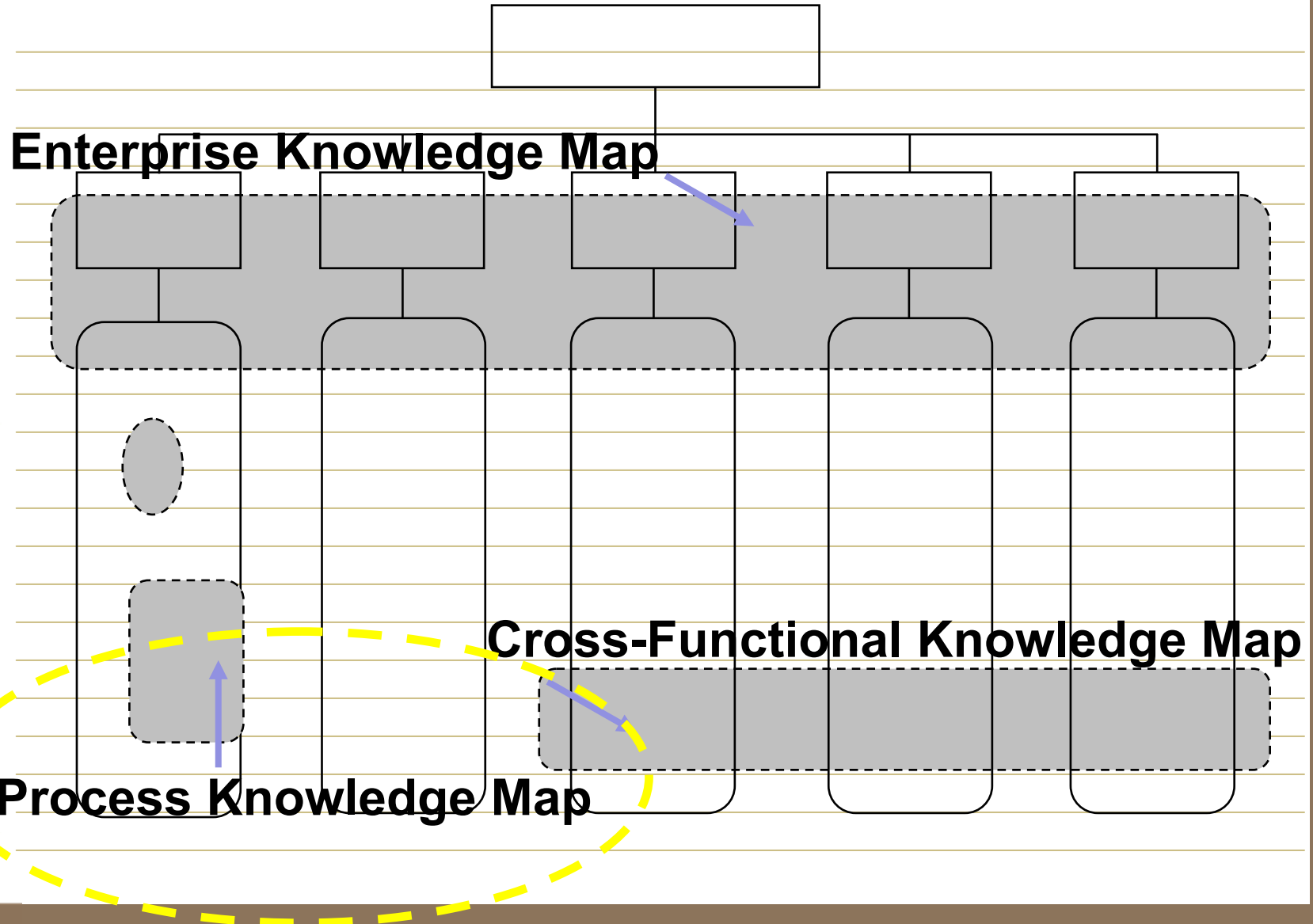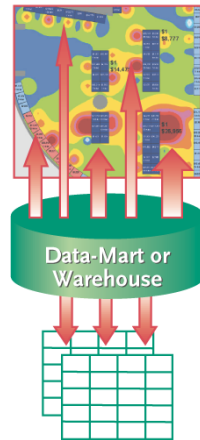
What it's NOT...

– Knowledge Inventory

– Knowledge Audit

– Search Tool

  • Autonomy

  • VisuAlert

Data Visualization
- Complex made simple
- Clarity
- Precision
- Efficiency

Database

Data-Mart or Warehouse

Database Mining

- Views of whole data
- Simple to understand
- Fast insights for management
- Near real time
- Precursor for fast and relevant data mining

- Storage of large amounts of data
- Used by mining and visualization as a resource

- Sample of data from database
- Allows factual analysis of that data
- Displays chart and statistical analysis
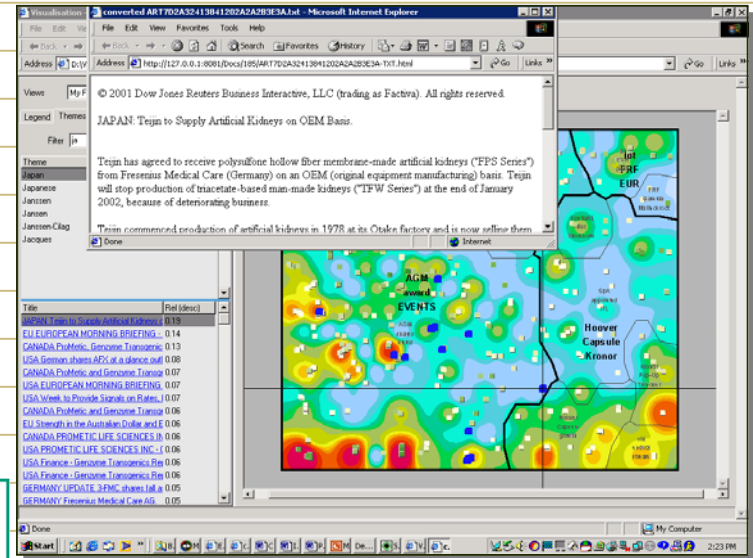
Not a

'visualization'

What it's NOT...

- A KM assessment of how well a KM initiative is performing

- An assessment of how well a Community of Practice is performing

- Either explicit knowledge OR tacit knowledge; both are necessary

- A solution

- A method to identify projects

- A way to create a KM strategy

Process Knowledge Mapping

- A *method of analysis* to define the knowledge needed and the knowledge available to support a business process.

- Knowledge Mapping identifies the:
  - *explicit knowledge* (knowledge artifacts)
  - *tacit knowledge* (undocumented information, expertise in people's heads)
  - *infrastructure* (where does it the reside)
  - *organization* (who and where are the people)

- In context of a specific *business process*

Why Map?

- Organizations use knowledge maps for a number of different reasons. Some organizations compile company locators to *find internal and external resources.*

- Others use them to *identify knowledge sharing opportunities* or knowledge barriers within cross-functional work groups.

- Many companies use knowledge mapping *before developing formal communities of practice or After-Action Reviews.*

Uses of Knowledge Maps

- Compile company locators – internal and external resources - KM Yellow Pages

- Identify opportunities to reuse information

- Locate naturally-occurring knowledge stewards

- Identify knowledge dependencies within cross-functional work groups

- Categorize value-added information resident within your organization

- Identify knowledge sharing opportunities

- Precursor to developing formal communities of practice

- Create a knowledge tool that helps users find what they need (e.g. Agricultural Trade Programming Tool).

Process Knowledge Mapping Answers Key Questions

- At all levels, the knowledge map provides an assessment of existing or required knowledge and information in the following categories:

  – *What* knowledge is needed?

  – *Who* has this knowledge?

  – *Where* does this knowledge reside?

  – Is the knowledge *tacit or explicit*?

  – Is the knowledge *routine or non-routine*?

  – *What issues* does it address?

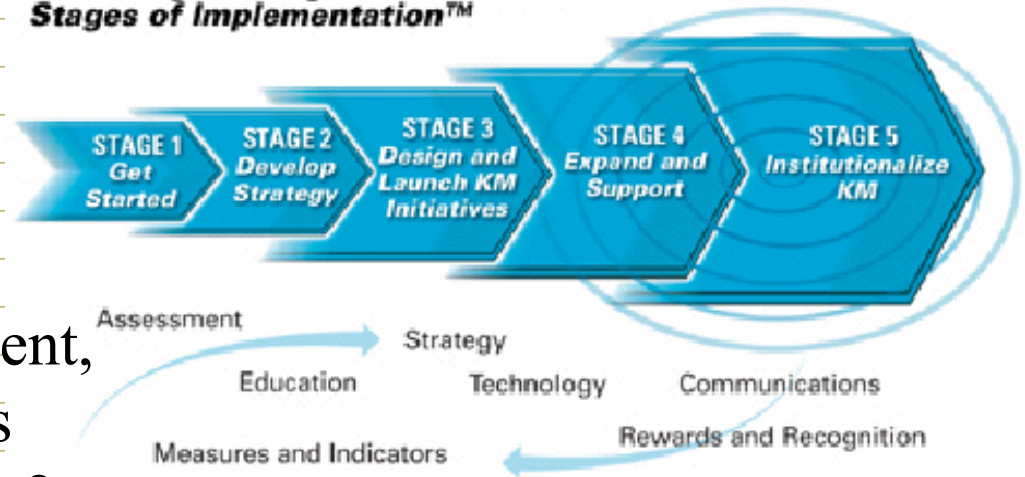# What a Knowledge Map Reveals about an Organization

- Identifies the core and contextual knowledge inside of an organization

- How information and knowledge flows

- What individual knowledge or expertise is critical to a process or focus area

When To Map

Organizations should not design a KM approach without first mapping their knowledge.

Within the context of APQC's Road Map to Knowledge Management, mapping knowledge is recommended in stage 2 (develop a strategy) or stage 3 (design and launch a knowledge management initiative).

APQC's Road Map to Knowledge Management Results: Stages of Implementation™

STAGE 1 Get Started • STAGE 2 Develop Strategy • STAGE 3 Design and Launch KM Initiatives • STAGE 4 Expand and Support • STAGE 5 Institutionalize KM

Assessment — Strategy

Education — Technology — Communications

Measures and Indicators — Rewards and Recognition

How To Map...

Sample Knowledge Map:

	(1)	(2)	(3)	(N)
Process Step	Determine test site concept regarding which features to address	Establish test site scheduling	Identify test site coordinator	Etc....
Objective of Step	Create list of expected problems and test structures to address	Make sure it's ready so it is useful to product	Assign responsibility to ensure test site design is complete	Etc...
Infrastructure	• Databases with info of previous projects (product and failure test results) • Design manuals • Test site documents	• Look at previous schedules • Project plan (top down req.) • Test site schedule • *Process roadmap*	• *Nothing* • *Note: no learning captured and applied re. Experiences* • *Note: need to define roles and responsibilities*	• Etc...
Social Capital	• Discussion among process design people • *Connecting with previous test site designers (all previous experience related)*	• Discussions with designers (knowledge of work behind design-how long it takes) • Discussions with test site coordinators regarding timing	• Relationship between managers and prospective test site coordinators	• Etc...
Content	• Knowledge of previous test site designers • Objectives of design • *Experience re. What worked well and potential problems*	• *·Knowledge of how long steps take* • *Knowledge of process and design re. what's possible* • *Knowing how long it will really take in mask house*	• Mgr's knowledge of people's capabilities • *Knowledge of someone's experience (someone who is systematic, can drive things upward, available, willing)*	• Etc...

Process Knowledge Mapping

Process knowledge mapping analyzes a business process or method to identify:

– Decision milestones (where knowledge is needed)

– Knowledge requirements (what knowledge is needed)

– Routes for access and retrieval of knowledge (through people and technology)

– Gaps between required skills and current skills

What do you need to know? Where does the knowledge come from? Who owns it? What knowledge, tools and templates exist today? What knowledge, tools and templates should be created? What barriers or issues exist ?

Tactical Steps

- Select the process/focus area (scope)

- Identify the key business value of mapping the knowledge – who will use it?

- Map the process(es)
  - Determine routine/non-routine tasks
  - Identify key decision points, hand-offs
  - Locate owners of, and stakeholders in high-value processes
  - Interview--follow the knowledge *pathways* through the organization
  - Inventory types of knowledge utilized and needed
  - Identify gaps, lack of connectivity, and information overload
  - Develop plan for collecting, reviewing, validating, storing and sharing knowledge and information

- Map the knowledge against the process, using the template

Knowledge Mapping Matrix

What knowledge is needed?	Who has it?	Who needs it?	Where is it?	Is it tacit or explicit?	Is it routine or non-routine?	What issue(s) does it address?

(W. Vestal, APQC, 2002)

Knowledge Mapping Steps

1) Review critical processes

2) Identify individual process steps within each process

3) Identify the knowledge required to fulfill the purpose of each process step

> **Determine the knowledge required by brainstorming, or conduct interviews with the process owners. Categorize the knowledge Content (Explicit, Tacit, Embedded), the Social capital (trust, interpersonal relationships, cultural norms) and Infrastructure (processes, tools, roles & responsibilities, incentives).**

4) Identify the knowledge generated for each process step

5) Create measurement criteria for each critical process step

6) Analyze the process maps (knowledge quality, knowledge sharing, ease of access, etc.)

Provide Answers to the Following Questions:

- *What do you need to know?*

- *Where does the knowledge come from?*

- *Who owns it?*

- *What knowledge, tools and templates exist today?*

- *What knowledge, tools and templates should be created?*

- *What barriers or issues exist ?*

	(1)	(2)	(3)	(n)
Process Step	Conduct design session	Document product gap	Develop prototype	Etc…
Objective of Step	Gather requirements for COTS software	Clarify requirements not met by package	Create working model for reqs verification	Etc…
Infrastructure	Methods and Tools Database Deliverables Database Project Mgmt Guidelines	Vendor Supplied Methods Methods and Tools Database Deliverables Database	Vendor Supplied Tools	Etc…
Social Capital	Discussion among functional consultants Connecting with SME's	Discussion with vendor Discussion with Technical Consultants	Relationship between vendor rep and tech consultants	Etc…
Tacit Knowledge	Knowledge of previous design sessions Estimating experience	Knowledge of developers skills Knowledge of package capabilities	Knowledge of vendor's tools Experience with functional reqs	Etc…
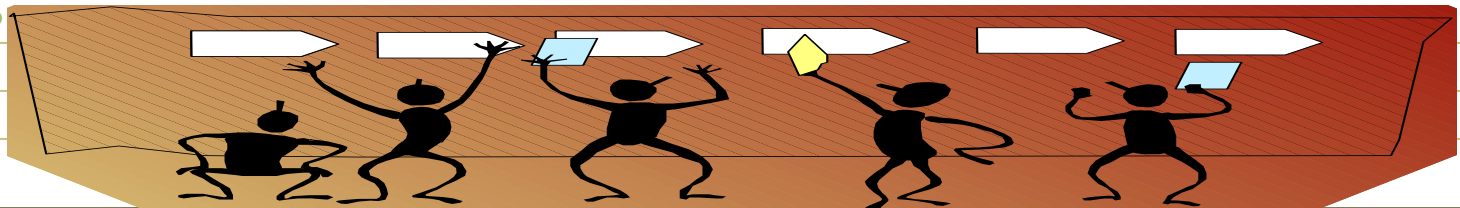
Analyze the process maps

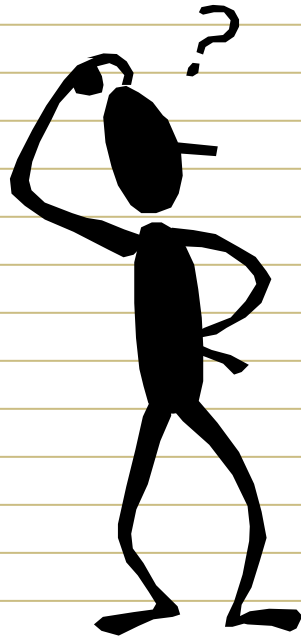Review completed process maps; for each process step, review the knowledge resources and determine:

- Do we leverage this today?

- Is the knowledge available and accessible to everyone who needs it?

- Are decisions made with all the right knowledge?

- Where should we focus our improvement efforts?

- Summarize the analysis:

- Create list of key strengths (things we do well should continue)

- Create list of key opportunities for improvement (things we need to fix), and expected benefits

Determine the knowledge required by brainstorming, or conduct interviews with the process owners. Categorize the knowledge Content (Explicit, Tacit, Embedded), the Social capital (trust, interpersonal relationships, cultural norms) and; Infrastructure (processes, tools, roles & responsibilities, incentives, etc.).

Lessons Learned

- Remember the 80/20 rule

- High level mapping of the process you want to share knowledge around is key!

- Make sure people who are intimate with the organization and process are involved

- Update your "map" periodically – knowledge has a shelf life (people move, technology changes, etc.)

- Do something with it – if you map for the sake of mapping, you've lost! What is the value proposition?
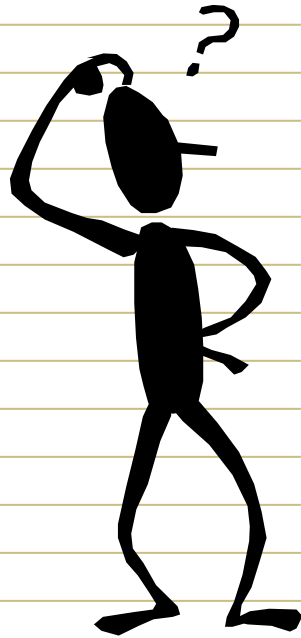
Knowledge Mapping

- **Questions**
- **Suggestions**
- **Concerns**

A method of analysis to define the knowledge needed and the knowledge available to support a business process

USAID Examples

- EGAT
  - Agricultural Trade Programming Tool
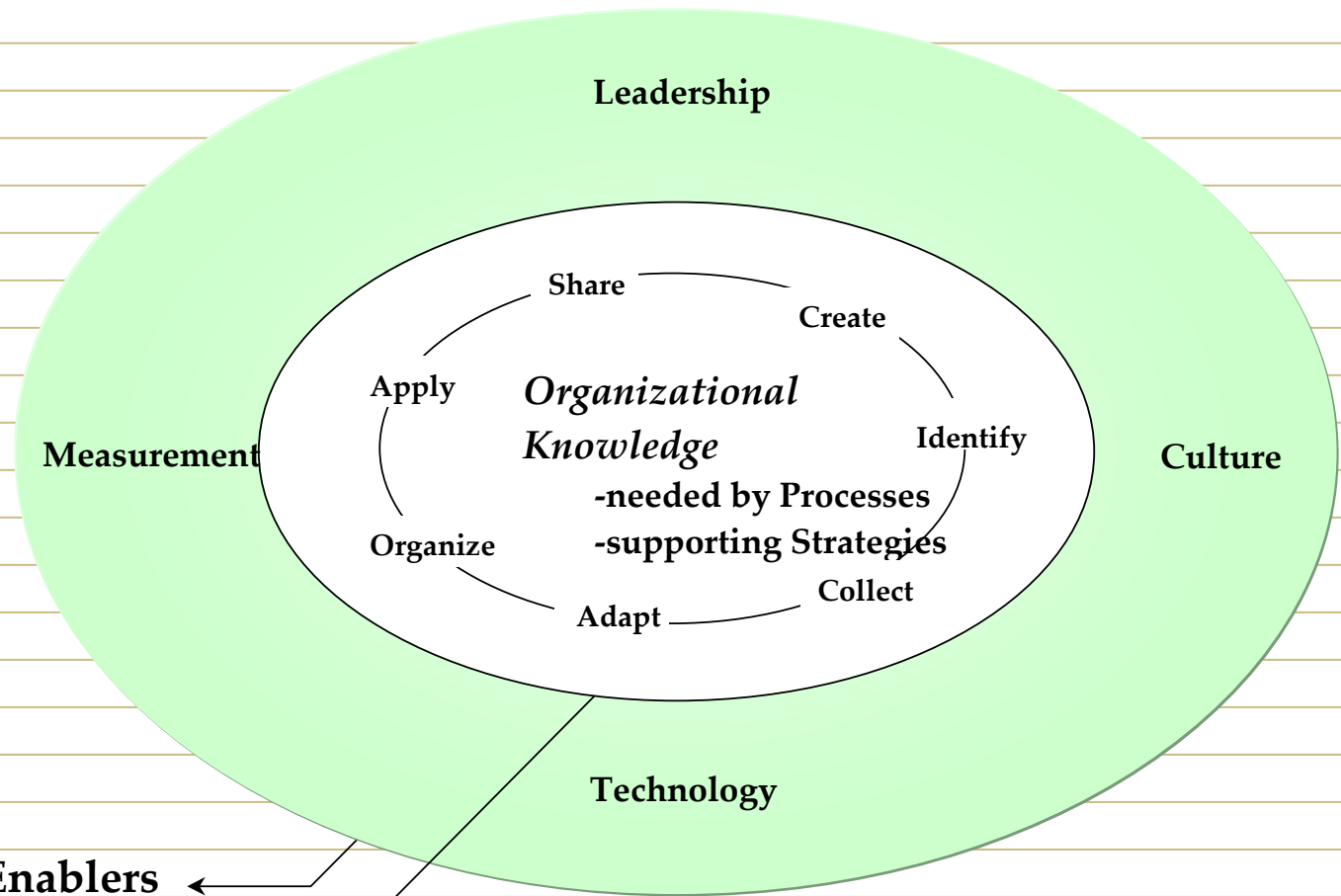
- Global Health
  - HIV/AIDS
  - http://inside.usaid.gov/GH/technical/so4/hivcop/index.html

Discussion

- **Which processes should be mapped?**
- **Who will do it?**
- **How should we coordinate the effort?**

A method of analysis to define the knowledge needed and the knowledge available to support a business process

Next Steps...

Leadership

Measurement

Culture

Technology

Share
Create
Apply
Organizational Knowledge
Identify
-needed by Processes
-supporting Strategies
Organize
Collect
Adapt

KM Enablers

KM Processes